ADMINISTRATIVE ISSUES IMPACTING THE OPERATION OF PRIVATE RETIREMENT PLANS

PRESENTED TO THE

SENATE GOVERNMENTAL AFFAIRS COMMITTEE

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ADMINISTRATIVE ISSUES

Basically, administrative issues impacting the operation of any private retirement plan involve one of the three following areas:

1) Plan design

2) Plan installation

3) Plan administration

Any other function of plan operation, such as plan communication, calculation of specific benefits, etc. are sub-sets of these basic areas. Additionally, an ongoing plan will continue to be subject to redesign based upon changing business, regulatory and legislative circumstances, and from time to time plans will be re-installed to reflect redesign changes. Finally, although the essence of administration never changes, the substance changes often due to the business, regulatory, and legislative environment within which private plans operate.

I. Plan Design

Prior presentations have dealt with the issue of plan design, and not much time will be spent on it in this paper. Basically, the plan design is developed by an employer and his advisors in an effort to provide employees and company with the delivery of retirement income benefits consistent with the goals at hand. Plan design should be a dynamic rather than a static function. It should be carried on year-in and year-out among the plan sponsor, his advisors, and perhaps employee group to reflect the dynamic nature of the business, regulatory, and legislative environment within which such plans operate. To a direct extent, plan design impacts the installation and particularly the administrative operation of the plan. For example, if a company maintained a profit sharing plan, such plan may provide for only one mode of payment and thus may be able to forego much of the administrative complexity associated with a different type of plan, for example, a defined

benefit plan. Thus, it is important that the "right" plan be implemented for any particular company. What the right plan may be depends upon stated objectives. The important point is that proper plan design should anticipate future administrative contingencies.

II. Plan Installation

Once an appropriate plan design has been arrived at, the plan has to be installed. The installation process requires preparation of the following material and submission to the IRS, Department of Labor or Pension Benefit Guaranty Corporation (PBGC) of appropriate information:

A) Plan Document and Trust Agreement (IRS)

B) Summary Plan Description (DOL)

C) Preparation of Internal Revenue Service 5300 Series forms for submission to receive plan approval (IRS)

D) Preparation of Notice to Interested Parties (IRS)

E) If a defined benefit plan, preparation of Pension Benefit Guaranty Corporation insurance premium payment form (PBGC)

F) Preparation of additional employee communication material, if desired.

A. Plan Document and Trust Agreement

The Plan Document and Trust Agreement detail the plan provisions agreed to by the plan sponsor. The plan sets out how the plan is to operate in practice, and who is to perform certain functions on behalf of the plan participants. For example, the plan will designate a plan trustee, a plan administrator, and may designate an investment manager, a technical and clerical administrator, or other persons to assist in the administration of the plan. The plan sets forth the eligibility requirements, effective date, benefit formula, retirement age, vesting schedule, forms of benefit

payment, joint and survivor language, ancillary benefits, authorized investment policy, and a myriad of other details associated with the continuing operation of the plan.

B. Summary Plan Description (SPD)

A Summary Plan Description (SPD) is required by the Department of Labor to be distributed to all persons who become eligibile to participate under the terms of the plan. The SPD is meant to be understood by the average plan participant, and it is required to be updated periodically to reflect any changes made in the plan. Such changes in the SPD are called Summaries of Material Modification (SMM), and reflect any amendments made to the plan document and trust agreement. SPDs are often set up in a question and answer format to enable participants to get a handle on what the retirement plan will deliver in the form of benefits. SPDs also contain sections relating to an employee's rights to receive benefit information from the plan sponsor.

C. Internal Revenue Service 5500 Series Forms

Depending upon the type of plan installed, a 5300 or 5301 form would be filed with the IRS in conjunction with the plan document and trust agreement and notice to interested parties to obtain advance approval of the plan's provisions and to qualify the plan sponsor for deductions for contributions made to the plan. The 5300 series forms are submitted with all plan installation or reinstallation materials, but a different form can be submitted with amendments where the plan sponsor is seeking approval of an amendment. Such forms set out the basic plan provisions for review by the IRS Employee Plans staff, and based upon the IRS' review, the plan either will or will not be "qualified". A plan is deemed to be "qualified" when it meets statutory requirements related to the items defined in II.A. Qualification of the plan is essential to ensure deductibility of employer contributions.

D. Notice to Interested Parties

This is a notice which must be posted at an employer's place of business and which announces to employees the implementation of a plan or the amendment of an existing plan. The notice provides employees an

opportunity to make comments to the IRS District Director about the establishment of the plan or any amendments thereto.

E. PBGC-1 Form

The PBGC requires filing of its insurance payment declaration form by all defined benefit plans not exempted under the statute. Basically, all non-multiemployer defined benefit pension plans not exempt under ERISA must pay a premium equal to $2.60 per participant per year for PBGC insurance coverage. Multiemployer plans pay a lesser premium, graded to $2.60 over a period of years.

F. Other Employee Communication Material

Often a plan sponsor will desire to communicate a plan's implementation in a more formal manner than simply by distributing Summary Plan Descriptions. Thus, the employer may authorize development of a slide presentation or other employee communication materials to communicate the implementation or amendment of an existing program. Communication of this type can range from colorful handout pieces, to slide shows, to video tape presentations, and the form and method of employee communication will often be dictated by the size and/or complexity of the plan being installed or changed. Employee communication services can be very expensive, and for the most part small plans will provide communication on a much more informal basis than large plans.

III. Plan Administration

Although plan administration is a day in-day out process, which should be dynamic rather than static, administration involves a number of basic functions, as follow:

A) Determination of annual eligibility for plan participation based upon an employee's age, hire date, hours of service, job classification, etc. and enrollment of eligible participants.

B) Determination of termination of employment, based on plan provisions.

C) Determination of vested percentage in benefit accrued to date of termination of employment.

D) Calculation of available benefits under the plan according to the plan's benefit formula.

E) Determination of forms of benefit payment and time when payment can commence. Proper benefit administration is essential to a smooth-running plan.

F) Determination of retirement status of participant and whether such participant is eligible for normal or early retirement or deferred retirement.

G) Determination of whether or not a participant is eligible to receive benefits in advance of any stated early retirement age.

H) Distribution of any participation, beneficiary, early survivor annuity, or other participant election forms requiring a decision on the part of a participant.

I) Annual plan renewal process of data collection and asset reconciliation to "balance the books" for the plan year.

In addition to these basic administrative functions to be performed by the Plan Administrator[1] or his delegate, as determined by the language in the plan document, the Plan Administrator must be certain to comply with all legislation and regulations in administering the plan. For example, the Plan Administrator must annually file the plan Annual Report with the IRS which details the basic operational and financial aspects of the plan. The form on which this information is provided is the Form 5500 plus attachments (e.g., 5500 Schedule A -- insurance information; Schedule B -- actuarial information; SSA -- Social Security deferred vested benefit information; etc.).

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(1) Plan Administrator is defined in ERISA Section 101.

The Plan Administrator is required under law to distribute to all plan participants a Summary Annual Report which purports to summarize the plan's financial activity for the year. Such report is generally considered to be of little value to participants, but under the law it is required to be distributed to plan participants.

Employers must provide plan participants a statement of vested benefits if requested by the plan participant. It is routine practice for single employer plans to provide a statement of a participant's account or projected benefits on an annual basis to such participant. Such statement would generally show the participant's name, date of birth, date of employment, projected retirement age and estimated benefits under the plan. Single employer plans are more easily able to produce statements of benefits than multiemployer plans, which often are subject to more complex recordkeeping. In the case of multiemployer plans, administrative offices are established to aid participants and beneficiaries in determining any retirement or pre-retirement benefits to which they might become entitled. The same is also true of the administration of single employer plans.

There are various timing requirements when certain information must be distributed to plan participants and beneficiaries. Plan Administrators must be careful to comply with legal requirements in order to avoid not only confusion on the part of participants and beneficiaries but also fines or penalties which might be levied by the IRS, Labor Department, or PBGC in the event forms and information are not filed or disseminated on a timely basis.

IV. Who Are The Players In The Administrative Process?

A. Plan Sponsor

(i) Personnel or human relations department.

(ii) Committee to review daily operational aspects of the plan.

(iii) Other departments (e.g., legal, accounting, payroll, etc.).

(iv) Named Plan Administrator (usually).

(v) May delegate administrative functions to a Technical and Clerical Administrator.

B. Plan Trustee

Individual or Corporate Trustee determines prudence of plan's investment policy and assists in investment record-keeping.

C. Legal Counsel

Prepares installation materials, amendments, other legal requirements, either in-house or outside counsel.

D. Accountant

Either in-house or outside for routine plan accounting functions, however, outside "independent" accountant opinion necessary for auditing a plan's Annual Report under ERISA.

E. Actuary

For Defined Benefit Plans, prepares annual report valuing plan's benefits for contribution purposes.

Presented by: Charles C. Tharp

PENSION BENEFIT GUARANTY CORPORATION

Statutory Basis and Purpose

The Pension Benefit Guaranty Corporation (PBGC) was established under Title IV of the Employee Retirement Income Security Act of 1974 (ERISA) to protect the retirement income of plan participants and their beneficiaries covered under private sector, defined benefit pension plans. PBGC was established to carry out the purposes of Title IV, which are to--

- Encourage the continuation and maintenance of voluntary pension plans for the benefit of their participants;
- Provide for the timely and uninterrupted payment of pension benefits under plans to which Title IV applies and;
- Maintain insurance premiums established by PBGC under Title IV at the lowest level consistent with carrying out the Corporation's obligations under Title IV.

The Multiemployer Pension Plan Amendments Act of 1980 (MPPAA) amended Title IV with respect to multiemployer plans and, among other things, stated that it is desirable to--

- Increase the likelihood of protecting plan participants against benefit losses, and provide reasonable protection for participants of financially distressed multiemployer plans;

- o Replace termination insurance with an insolvency based program that will enhance the financial soundness of multiemployer plans, emphasizing plan continuation, and contain program costs within reasonable limits;
- o Alleviate certain problems which tend to discourage maintenance and growth of multiemployer plans;
- o Provide a financially self-sufficient program for the guarantee of employee benefits under multiemployer plans.

Single-Employer Program

Overview: PBGC insures the payment of benefits guaranteed by law in the event a covered single-employer pension plan terminates.

A plan administrator who terminates a single-employer defined benefit plan must notify PBGC prior to the termination. The Corporation determines if the plan's assets are sufficient to pay the benefits guaranteed by law. If the plan's assets are sufficient, PBGC authorizes the distribution of assets pursuant to plan provisions and applicable requirements of law.

PBGC becomes trustee of plans with insufficient assets in order to assure that plan participants are paid their guaranteed benefits as mandated by law. In becoming trustee, the PBGC takes over plan assets and assumes the liabilities for

guaranteed benefits. Employers that terminate plans with insufficient assets to provide all guaranteed benefits are liable to PBGC for the amount of the plan asset insufficiency, up to 30% of the employer's net worth.

PBGC must accept all claims made against it, no matter what the financial status of the plan or the employer and without regard to the payment of PBGC premiums.

Program Scope: The single-employer program covers nearly 29 million participants in approximately 105,000 defined benefit pension plans.

Operating Statistics: Between the enactment of ERISA in 1974 and the end of FY 1983, PBGC has received about 50,200 notices of plan termination. About 98% of such terminated plans have sufficient assets to pay all guaranteed benefits and are authorized to distribute assets. At the end of FY 1983, PBGC was trustee of about 900 plans and was responsible for the payment of benefits to about 116,000 participants. About 60,000 individuals were in pay status receiving a total of $135 million in annual benefits.

Table 1 provides data on processing activity for PBGC's nine years of operations.

Program Financing: PBGC collects a mandatory annual premium of $2.60 per participant from each covered single-employer plan.

Premium revenues, together with payments collected under the employer liability provisions of the law, assets of plans under PBGC trusteeship and investment income on PBGC's assets, are used to discharge PBGC's liabilities under the single-employer program. PBGC does not receive funding from Federal taxation, nor are claims against the insurance program obligations of the U.S. Government. PBGC premium increases and changes in the premium basis must be approved by the Congress.

The PBGC has had a policy, since its inception, of funding its program on a current basis, so that termination claims (net of allocable plan assets and employer liability) incurred in a year plus administrative expenses for the year are fully funded by premium revenues and investment income for that year. One difficulty in projecting PBGC's claims is that they are attributable in large part to a relatively small number of very large insufficient terminations. The number and size of large claims have grown throughout the insurance program's history. Past claims experience thus far has been the most statistically reliable basis for projecting future claims.

In FY '82 the PBGC experienced extremely high claims--$220 million in losses. Claims in FY'83 were also higher than projected--$175 million in losses. The PBGC is requesting the Congress to increase the single-employer premium rate to $7 per participant per year in order to fund its accumulated $520

million deficit and to cover future claims as they are incurred.

In addition to the requested premium increase, PBGC is seeking Congressional approval of proposed legislative amendments to the single-employer program. These amendments are intended to minimize program abuse, encourage the maintenance and continuation of voluntary defined benefit pension plans, and assure the timely and uninterrupted payment of pension benefits to participants and beneficiaries.

Multiemployer Program

Overview: In September, 1980, the Congress amended ERISA to establish a plan insolvency insurance program. Under this program, an employer is assessed liability when it completely or partially withdraws from a multiemployer plan. (Under prior law, an employer could withdraw without such liability. However, if the plan terminated, PBGC guaranteed certain benefits and employers that contributed within the five years preceding termination were liable to PBGC for a proportional share of any unfunded guaranteed benefits.) Under the 1980 amendments, multiemployer plans are responsible for assessing and collecting withdrawal liability and withdrawal liability collections become assets of the plan. PBGC provides financial assistance in the form of loans to multiemployer plans that are not able to pay the benefits that are guaranteed by ERISA, as

amended, in order to insure that participants receive those guaranteed benefits.

Program Scope: The multiemployer program covers about 9 million participants in approximately 2500 defined benefit multiemployer plans.

Program Financing: PBGC collects an annual premium from each covered plan. The current premium rate of $1.40 per participant was set in 1980. The premium rate is scheduled to increase over a nine-year period to $2.60. The PBGC Board of Directors may escalate the multiemployer premium increases if certain conditions exist; however, the maximum premium which may be established without congressional approval is $2.60 per participant.

Operating Statistics: PBGC is currently providing financial assistance to two multiemployer plans and has set aside a reserve to cover losses from five additional plans. Payments net of repayments through FY '83 totalled $940,000.

TABLE I. SINGLE-EMPLOYER TERMINATION PROCESSING

	FY 84[2] (Projected)	FY 83[1]	FY 82	FY 81	FY 80	FY 79	FY 78	FY 77	FY 76	FY 75
Termination notices received	5,700	6,730	6,003	4,949	3,933	4,810	5,158	7,202	8,932	2,470
Sufficient non-trusteeship cases processed	4,400	4,923	4,272	4,195	3,465	5,484	7,420	4,510	1,533	0
Plans in PBGC trusteeship	994	894	780	659	514	389	266	145	48	0

[1] Data are preliminary and may be revised

[2] Based upon preliminary projections

WHO SHOULD PAY FOR PENSIONS?

HOW MUCH?

A Presentation for the United States Senate
Committee on Governmental Affairs
Subcommittee on Civil Service, Post Office and General Services

Policy Forum
on
Pension Funding, Investment and Administrative Issues
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"WHO SHOULD PAY FOR PENSIONS? HOW MUCH?"

Many questions must be studied in the design, implementation and operation of a new Civil Service Retirement System:

- Should the new plan be a defined benefit plan, a defined contribution plan or a combination of the two types?
- Should the new plan offer federal employees the kinds of retirement vehicles available to participants in private and other public plans, such as salary reduction plans or variable annuity options?
- How large should the benefits be on top of Social Security? How large to produce adequate yet not excessive benefits?
- What protection should be provided for terminating employees and survivors of participants who die?
- How should benefits for retirees be protected against inflation?
- What benefits should be provided for early retirement? For postponed retirement?
- Should benefits be integrated with Social Security?
- How should funding be handled?
- How should pension assets be invested? By whom?

The central answer to all of these questions requires proper balancing of benefits and costs.

ROLE OF EMPLOYEE CONTRIBUTIONS

For workers not in federal employment, responsibility for benefits over and above a basic Social Security level is carried by employers and employees. Similarly, the costs of adequate pension benefits for new federal employees, over and above Social Security, should be the responsibility of the employees and the governmental units for which they work. Employees must be encouraged to share in a significant way in desired accumulations toward retirement. Employee contributions allow a pension system to be equitable for all while still providing a degree of choice to tailor pre- and post-retirement income to suit individual needs.

NECESSITY FOR PRE-FUNDING

Minimum funding -- whether by the same standards required of private plans under the Employee Retirement Income Security Act of 1974 (ERISA), or by standards modified to reflect the unique position of the federal government as an employer -- should be applied to the federal agencies for their share of the retirement benefits. One of the gravest dangers in designing a pension system is that, with the bulk of costs and almost all promised benefits due in the distant future, any inbalance between costs and benefits may remain buried

for years. A false sense of stability can build up over years when the cash flow of the system is heavily positive, even leading to benefit increases that may not be supportable over the long term. When the costs do catch up -- and they ultimately must since they cannot be deferred indefinitely -- it will prove virtually impossible to amend either benefits or contributions to then strike the balance which should have been orchestrated at the outset. Particularly in these days when the Administration, the Congress, and the American people are acutely aware of the costs of running the government, each entity of the government must recognize as incurred the true costs of the retirement benefits promised to its employees.

COST CONTROL

A decade ago the Civil Service Retirement System was the envy of most other U.S. retirement systems, both public and private. A Johnson & Higgins survey on "American Attitudes Toward Pensions and Retirement," conducted in 1978 by Louis Harris & Associates, found that a one-third plurality of employees and retirees felt that plans for government employees offered the highest benefits for the money contributed. Another one-third preferred a plan similar to the old CSRS over all other plans if they had to rely solely on one plan. In comparison, union plans and Social Security received generally negative ratings.

Adverse economic conditions of recent years -- in particular, a sluggish economy and fiscal disarray -- limit the funds the federal government has to spend on the CSRS. Further, inflation has increased the benefits paid. Result -- favorable assessment of the system has been tempered. What previously were seen as generous benefits are now being criticized as overly expensive and excessive. Today, instead of seeking to set national policy which would encourage other plans to conform to the model set by the CSRS, Congress faces the urgent need to bring federal employees' retirement benefits more in line with lower benefits received by the rest of the population.

The gigantic cost of pension benefits is the strongest and most frequently voiced criticism of the Civil Service Retirement System. Whether one relies on government projections, which use low-inflation assumptions for future experience, or independent projections, which may anticipate higher inflation scenarios for the future, the picture is one of costs which have spiraled out of control. At the same time, we hear warnings from many informed observers who say that not enough is going into the system. Obviously, something has to give. If Congress designs the new CSRS to parallel the old system, both with respect to contributions and benefits, then the answer to the "How much?" question on costs will

very quickly be, "Too much!" And the response to the "Who pays the bill?" question will be a defiant "Not me!" from federal employees and taxpayers alike.

DEFINED BENEFIT PLANS

As was described in the first session of this forum, prior to the 1983 Social Security Amendments the CSRS was a contributory defined benefit plan. Defined benefit plans determine an individual's retirement benefit, using factors such as credited service and salary. Aggregate contributions from all sources are then set to be whatever is required under the plan's funding method to provide the promised benefits.

The term "contributory" defined benefit plan indicates that the plan is supported by employee contributions, instead of the employer paying the entire cost. Federal employees shared in the total cost, but the defined benefit character of the plan remained the same: benefits were by formula, independent of the amount of employee contributions or investment results of those contributions. The only relationship between employee contributions and benefits was an indirect one: both were dependent on the salary of the employee. Benefit amounts were geared to the final three years of earnings before retirement, while contributions tracked the salary of each and every year of the employee's service. This difference, plus the fact that the benefit formula brought in other factors unrelated to salary, meant that it was possible for two employees to receive comparable retirement benefits, having made different contributions, although any extreme disparities would be rare.

More important, the retirement benefits bore no relationship to investment experience (either actual or imputed) of accumulated employee contributions. If investment income were lower than anticipated, the government's share of the cost merely increased, but an individual's retirement benefit remained the same. Similarly, if investment experience were favorable, the employee would not receive a higher benefit.

DEFINED CONTRIBUTION PLANS

Aggregate contribution levels needed from all sources will be affected by whether the plan is a defined benefit plan, a defined contribution plan, or some combination of the two. Under a defined contribution plan, the periodic contributions to the pension fund are determined, and the individual's benefit becomes whatever may be provided for by the invested balance which has accumulated at retirement and later.

COMBINATION PLANS

With respect to the question of pension costs, the two approaches of defined benefit and defined contribution can be seen as different ways of dealing with future economic uncertainties. If every single factor affecting future costs and benefits were known, it might be possible to derive a set of formulas which would equate benefit goals with contribution levels. However, no one has this crystal ball. A combination plan using elements from each approach may end up serving as the best vehicle for the new program.

PRE-1984 CSRS PLAN

Under the pre-1984 CSRS plan, federal employees paid 7 percent of their salary into the system. For an employee working 20 years, this employee contribution rate would produce a balance at retirement equal to about 1.75 times the average of the final three years of earnings under typical economic assumptions. That is, if an employee's final average earnings after 20 years were equal to $25,000, then the employee's contributions with interest would have accumulated to an amount on the order of $44,000. With 30 years of service, the balance would be about 3 times final average earnings.

The federal employee with 20 years of service would receive an initial benefit equal to about 37 percent of the final three years average earnings. This retirement benefit would be indexed to rise with the cost of living. Under typical assumptions, the balance, including employee contributions, required to purchase a retirement benefit at this level with the cost of living feature would be on the order of 5.5 to 6.5 times the employee's final average earnings. For the 30-year employee, the benefit level would be about 56 percent of final average earnings, and the balance required to purchase the benefit at retirement would be about 8.5 to 10 times the employee's final average earnings. If the 30-year employee retired with unreduced benefits at age 55, as is allowed under the pre-1984 plan, the balance required at retirement to purchase the benefit would be on the order of 11 to 14 times final average earnings. These figures are very rough estimates and somewhat dependent on salary experience of the employee during the term of employment, inflation following retirement, the lifespan of the employee after retirement, and other factors. The figures tend to bear out the contention of actuaries who calculate the cost of the CSRS at about 35 percent of payroll.

The 35 percent figure reflects the long-term cost of the system. Financing of the system through current contributions need not adhere precisely to this figure. Over the next ten years, contributions into the Civil Service trust funds are projected to be about half a trillion dollars. Of this amount, 13 percent would

represent employee contributions. Another 28 percent would come from investment income earned by fund assets. The remainder would come from government sources.

TRANSITION FOR POST-1983 NEW HIRES

In late 1983, pending formation of the supplemental CSRS for post-83 employees, Congress enacted a temporary measure to preclude the new hires from being compelled to contribute the full 7 percent to the federal system while contributing 5.7 percent towards their retirement benefits under Social Security. The temporary plan calls for the new hires to contribute 1.3 percent to the federal system. At retirement, the portion of their Civil Service pension earned during the transition period would be offset by the amount of Social Security benefits earned during that time. Thus, during the transition contributions and benefits for the new hires are equivalent to the old Civil Service system amounts for most affected individuals, unless the law is changed to simplify administration.

PRE-1984 CONTRIBUTIONS

Contributions to the pre-1984 Civil Service Retirement System came primarily from four sources:

- Employee contributions, for most civil servants at the 7 percent rate; the contributions are mandatory, and represent after-tax dollars;
- Matching 7 percent contributions from the agencies employing the participants;
- Income from the trust fund assets; and
- Appropriations from the Federal Government according to a funding strategy meant to cover increased liabilities and interest on the unfunded liability, which in general represents the difference between the present value of accrued entitlements and trust fund assets on hand.

Alternatives which might be considered for the new supplemental federal plan include voluntary employee contributions, employee contributions from before-tax compensation, and special taxes earmarked for support of the system.

INVESTMENT CONSIDERATIONS

Investment issues are related with cost issues in both conceptual and practical ways. The cost concepts which are at stake can be viewed in terms of the control and use of accumulated funds. Pressures have been building in the past decade in favor of socially "desirable" investment of pension assets. The social investment

debate takes many forms, from objections to investment in what are deemed morally repugnant entities, to support of domestic industry, to freedom to choose alternative investment vehicles such as gold or real estate. If a cost level for the CSRS is fixed so as to accelerate funding for defined benefits, these pressures are likely to play a significant role in the design and operation of the system, particularly given the high visibility of the federal system vis-a-vis other retirement plans. The implications of a large federal pension fund with socially motivated investments reach far beyond the operation of the retirement plan itself, affecting the capital structure of the U.S. economy and influencing policies pursued by private and other public pension programs.

Major groups sharing the cost for the pensions of federal employees have a practical interest in how funds are invested. Taxpayers footing the bill for the government's share of the costs will want to see the funds invested in ways that simultaneously reduce the cost burden and provide financial support for private industries, goals which all too frequently are conflicting. However, even if the federal employee's share of total pension costs is low, a significant portion of accumulated funds could be seen as representing employee contributions. In a contributory defined benefit plan with minimal advance funding of benefits, it is usually deemed inappropriate to use contributions of active employees to pay the benefits of current retirees, as is done under the Social Security system. The employer, the federal government, directs much of its share of current contributions toward a pay-as-you-go financing of current benefits. A greater portion of pension assets than would be indicated by contribution rates themselves can thus be viewed as employee money. If this is the case, employees may want to share in control of the destiny of their retirement savings. The investment policy of the CSRS must reflect all of these considerations, while still remaining impartial in its choice of investments, so that competitive market forces can operate freely. Even the relatively independent procedure of investing in government bonds does not entirely avoid facing such investment issues. The effect on supply and demand of funds in credit markets introduced by so significant a player as the CSRS could be overwhelming in time.

The level of total contributions will directly affect the level of funds, as well as the rate of buildup of the funds. The allocation of costs between various sources can decide the parties to be viewed as those to whom the trustees of the fund are responsible. Thus, as we have briefly examined, the level of costs can play a role in matters affecting investment decisions. Year-to-year and ultimate results of fund investments can also have a very significant practical effect in the other direction: investments will affect the required level of contributions. Investment income is an important source of cash flow into the pension fund. For private plans, in particular, accumulation of a large pension fund will have a primary

purpose that tends to overshadow consideration of the fund's effect on costs. The fund provides security to plan participants, an assurance that promised benefits will be paid regardless of continuance of their employer. Public plans, and specifically the federal retirement system, do not face the same degree of uncertainty about future financial failure. Although there are practical limits to the cost burdens which can be passed to the taxpayer, federal employees can be assured that their employer and their pension will be there when they retire.

FUNDING POLICY

Security aspects of a pension fund are, however, only a part of the picture. More recently, private and public plans alike have become increasingly conscious of the role the fund plays in directing and stabilizing the costs of the plan. One role of the fund in cost control is relatively obvious. In general, the larger the fund, the lower will be current required contributions. This should be a consideration in deciding the future stream of contributions to be paid into the system. Contributions which fail to build up a decent-sized fund will usually have to ultimately increase, to replace costs which otherwise might have been paid for by income from the fund.

Funding policy, the contribution rates, and the resulting size of the fund clearly affect future cost patterns according to expected income from the fund. These considerations are critical in designing the plan not only with respect to the level of costs, but dealing with the variability of future costs as well. Employee contributions should be at as stable a rate of compensation as possible over successive generations, in order to ensure equity of the system from one generation to the next. If total costs have inherent instabilities, the fluctuation in year-to-year costs falls on the shoulders of the federal government, introducing aberrations into the federal budget. The possibility of such fluctuations or the chance that cost trends will exhibit future tendencies above or below set goals can only be seen by conducting a projection of future federal workforce demographics, contributions into the system, and asset experience, using a dynamic range of realistic assumptions regarding the future.

TOTAL COMPENSATION

Retirement benefits under the pre-1984 CSRS have been criticized for lack of consistency with broader employment and compensation policies of the federal government. Generous retirement benefits can lure the high-salaried career civil servant into an early retirement, particularly since the compensation for higher paid

federal employees is often low relative to employment in the private sector.

The relationship of the retirement program to overall compensation policy obviously must examine costs as well as benefits. The balance sought between pre-retirement compensation, net of taxes and employee contributions to Social Security and the CSRS, and after-tax retirement income must be equitable between the various salary grades in the Civil Service. Currently, the system may provide the higher salaried federal employee a better standard of living after retirement than before. For many such employees, this presents an irresistible incentive to retire prematurely or find other work. Trying to correct the balance by increasing the contributions or decreasing the benefit levels for the higher paid federal employee could, on the other hand, negatively affect the hiring of quality employees. By contrast, clerical-level federal employees are given current compensation on a more even scale relative to comparable private sector employees. While CSRS pensions have been generous for them as well, the incentive to retire early is not as great as for the higher paid civil servant.

SOCIAL SECURITY INTEGRATION

Evening out the incentives to retire by shifting some of the cost burden to employee contributions from lower salary grades would be politically impossible and economically counterproductive. At the very least, however, the situation generated by the new CSRS should not be made worse than the status quo present under the old system. Since Social Security benefits replace a greater percentage of pre-retirement income for the lower salaried employee than for the higher paid, an overall balance strongly suggests the need to develop an integrated approach by designing the new system as a supplement to Social Security coverage.

FOCUS OF STUDIES

In order to settle on how much the new system should cost, Congress must first decide whether the current effort to design a supplemental plan for new federal hires is to isolate attention solely on the pension system itself, or encompass the broader issues related to total compensation for the federal workforce. Several commentators have observed the complexity of broadening the scope of the project, advising a limited look at only the retirement system. If Congress follows this course, it runs the risk of implementing a plan which would be inconsistent with broader compensation policies. Subsequent modifications would then have to adjust compensation to reflect aberrations in retirement policy or face further changes in the retirement system.

Congress should determine a number of conceptual issues before proceeding with the particulars of a new system:

- Are retirement benefits to be viewed as benefits of employment above and beyond the employee's compensation, or as an integral part of a pool of resources?
- Is the emphasis to be on the individual, providing for personal characteristics such as family and health differences with little or no extra expense laid upon the employee for covering such differences; or will the emphasis be on the position, with a particular level of compensation and subsequent retirement allotment to be then allocated as the individual chooses to cover differences in personal circumstance?
- How shall the ability to pay for the cost of pensions affect the design of the system?

FLEXIBILITY

In the private sector, the emphasis is increasingly one of a flexible view of compensation. The employer's and employee's ability to pay for benefits set a floor and a ceiling on total compensation. The resulting pool of financial resources is made available to tailor to individual needs and expectations, allowing choice and limiting inequities. The flexible compensation approaches available under Section 125 of the Internal Revenue Code, while currently jeopardized by adverse conclusions of the Internal Revenue Service, represent the direction of private industry in this regard.

BENEFITS VERSUS COSTS

Next, Congress needs to decide on the overall approach to the problem of balancing benefits and contributions:

- Should costs first be determined, by comparison to the costs of comparable workforces in the private and public sectors and consideration of federal budget goals, then have benefits geared to the calculated costs? or
- Should benefits be determined first, based on a determination of what would constitute adequate retirement protection and similarly comparing benefit levels and features to those offered employees in other plans, with costs the amounts necessary to provide those benefits?

OUT WITH THE OLD?

The degree to which the new system will reflect the goals and structure of the old federal system will affect decisions here. Are

benefits to be as generous as they have been in the past? If so, what have we gained! Are particular features which have been targeted as costly -- most notably, unreduced early retirement allowances and inflation protection -- to be continued? In the worst case where benefits and features are to be comparable to the past system, would the allocation of costs be shifted, with increases in employee contribution rates or inflows from other sources, such as earmarked taxes?

Congress must then address group and individual equities within the system. Are different branches of the Civil Service to be provided uniform protection? How are the needs of older employees to be balanced with those of younger employees? short service employees with career employees? How will the tilt in Social Security protection toward lower salaried employees be reflected in Civil Service Retirement System contributions and benefits?

EMPLOYEE CONTRIBUTIONS

The nature of employee contributions should be reviewed. Might voluntary employee contributions be encouraged, to help provide an add-on layer of retirement protection? Should a portion or all of employee contributions be on a before-tax basis?

GENERAL CONSIDERATIONS

The program fashioned out of this review process should then submit itself to a broad view relative to funding of the system. Are contribution patterns reasonably stable? How dependent are costs on the health of the national economy? What funding method should be employed to determine the government's contribution to the system, and what accounting basis should be used to charge the different government agencies with their share of the costs? How are assets to be invested, and who should control these investment decisions? Last, but certainly not least, what implications are there for national pension policy in other public sectors and in the private sector deriving from the design of the new system?

FUNDING THE DEFINED BENEFIT PENSION PLAN

BY

JAMES A. CURTIS, F.S.A.

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INTRODUCTION

Overseers of defined benefit pension plans review many different kinds of information. They seek investment advisors to improve the asset performance. Their accountant reports on the reasonableness of the fund accounting. Legal counsel advises upon the methods of maintaining the trust in accordance with the pension laws. The actuary monitors the pension fund, measuring assets and liabilities and advising on the annual cost and funding status. This discussion will focus upon the actuarial advice: to look at the elements used to develop the pension cost and funding status.

Consider a final average plan - that is the benefit payable at retirement depends upon earnings a few years prior to retirement, not upon the career earnings of the employee. Under this sample plan, the benefit accrues at 1.5% per year of service times the final average salary. For example, an employee becomes covered by such a plan at age 35, works for 30 years under the plan and retires at age 65. Assuming the final average monthly salary of $2,000, the benefit at retirement is 1.5% times $2,000 times 30 years of service, or $900 per month. See Figure 1.

TYPICAL DEFINED BENEFIT PLAN

BENEFIT = 1.5% OF FINAL AVERAGE SALARY PER YEAR OF SERVICE

ENTRY AGE = 35

AVERAGE SALARY = $2,000 / MONTH

BENEFIT AT AGE 65:
1.5% × $2,000 × 30 YEARS

EQUALS

$900 PER MONTH

Figure 1

You will note that under this plan structure, no benefits are payable to the employee until retirement occurs at age 65. Thus, it is the duty of the actuary to provide an approach to accumulate funds to be available for paying the $900 per month benefit commencing 30 years hence.

The following illustrates visually the pension fund as a reservoir of assets:

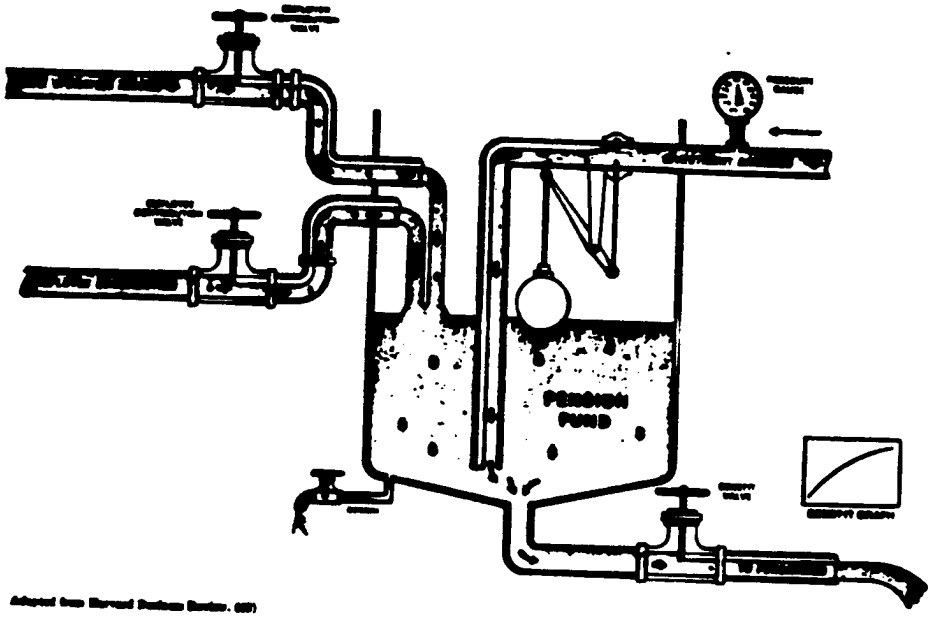

Figure 2

Deposits to the fund are made by employer contributions; additional inflow may be achieved if the plan provides for employee contributions. As a pension fund develops, and presuming a positive investment rate of return, then investment earnings also flow into the fund. These three major contributing factors provide the funds to pay the specified benefits under the pension plan.

From the bottom of the reservoir flow the benefit payments and expenses for administering the fund. Note that the reservoir fills with assets if the deposits come into the fund at a faster rate than payments go out. On the other hand, if the contributions and investment performance do not keep up, benefit payments and administrative costs will overpower them and the fund will diminish in size.

Thus, it is the responsibility of the actuary to monitor the contribution valves, the level of the pension fund and the rate of benefit payments to assure a proper funding of the plan of benefits. Stated mathematically, the funding process involves the continuous balancing of the following equation:

$$\sum \text{ACTUAL COSTS} = \sum \text{BENEFITS PAID PLUS EXPENSES LESS INVESTMENT INCOME}$$

Figure 3

Under this definition, the total cost of the pension plan is the total benefits and expenses paid, less the investment income earned.

WHAT IS DONE BY THE ACTUARY?

For the actuary to perform his duties, it is necessary to coordinate a great deal of information. At the outset, the actuary must identify the benefits provided by the pension plan. Having identified those benefits, he must gather the pertinent employee information to provide a basis for estimating future benefit obligations of the plan. Also, recall that the pension costs are related to the investment income earned by the pension fund and, hence, the actuary also needs the current value of the plan assets. With this information, the actuary then selects the necessary assumptions, the actuarial cost method and completes the computation of the pension plan costs.

Plan of Benefits

Generally, the plan document contains the benefit promises which the actuary considers in determining the current funding requirements for a pension plan. Although most plans have unique features, there are several items which the actuary normally focuses upon when reviewing the plan of benefits:

PLAN OF BENEFITS

- UNIT OF BENEFIT
- NORMAL AND EARLY RETIREMENT
- VESTING
- DISABILITY
- DEATH
- SERVICE

Figure 4

Unit of Benefit. The unit of benefit is the cornerstone of the plan of benefits. A plan may provide a flat amount per year of service, for example, $20 per year of service. Another approach could be a flat amount, which provides a minimum period, for instance, of $400 and 20 years of service. A common approach today is to provide benefits related to both years of service and a percentage of salary, where the salary may be a career average or a final average basis.

Normal and Early Retirement. Most plans provide a normal retirement benefit calculated by applying the unit of benefit commencing at a set age, such as 65. Typically, benefits are payable for retirement before the normal retirement age. To encourage early retirement, some plans provide that the benefit earned at the early retirement date will be paid without a significant reduction. Other plans provide that early retirement benefits are available, but only with a reduction to offset the additional cost of paying the retirement benefit sooner. The amount of reduction is a significant feature in computing actuarial value of benefits under a pension plan.

Some plans, in addition to providing for early retirement benefits, provide a supplement to assist an early retiree during the period between retirement and the date Social Security benefits commence. The actuary must recognize all types of retirement benefits in arriving at the actuarial costs.

Vesting. All pension plans falling under the jurisdiction of ERISA provide that a covered employee may become "vested" in his benefit and leave the plan with a right to receive benefits in the future. As an example, this may be after 10 years of covered employment under the plan. The vesting rule must be known by the actuary to properly account for the cost associated with an employee leaving the plan prior to retirement age.

Disability. Many pension plans provide some sort of disability benefit for employees who become disabled prior to their retirement age. For example, the plan may waive any early retirement reduction which would otherwise apply and pay the accrued benefit at disability. Features such as these are important to the actuarial determination.

Death. All pension plans covered by ERISA now provide a minimum death benefit if a covered employee dies during the early retirement period. The plan may charge the employee for this coverage but, more typically, the plan absorbs this cost. Many plans provide more than the minimum death benefit by extending coverage below the early retirement age or by providing a larger than required benefit. Of course, the actuary needs to know the plan provisions regarding death benefits to properly determine plan costs.

Service. How does the plan treat an employee's past service prior to the date that the employer introduced the plan? At start up, many plans grant each employee credit for past service with the employer. Also, amendments to plans which increase the benefit level may be introduced in a fashion to credit the higher benefits for past service. Features such as these affect the cost of the plan and the actuary must consider these provisions in determining cost.

Gather Employee and Asset Data

Having identified the significant plan provisions, the actuary must next consider the employee population covered by the plan. He needs certain information concerning the covered employees, such as age and past accumulated benefit credits. Furthermore, information regarding the employee's prospects of earning future credits (for example, the current covered earnings during the last few years) is often required.

Former employees who terminated with a vested interest have a claim to future benefits. Consequently, the actuary needs to know the age, the date at which future benefits become payable, the amount and form of such benefits. Similar information must be obtained for retired employees and beneficiaries in order to properly evaluate the cost of their remaining benefits.

In addition to the employee related data, the actuary must gather information regarding the current value of the plan assets. In this regard, it is necessary that the asset valuation be as of the same date at which pension costs are being determined. Typically, assets are valued at fair market value. However, other methods, such as amortized cost or recent average value, might be used to smooth asset values due to fluctuating market conditions.

Actuarial Assumptions

To compute the cost of any pension plan, it is necessary that the actuary select several assumptions. Figure 5 identifies several important assumptions and illustrates the effect upon cost for an increase or a decrease in the actuarial assumption:

ACTUARIAL ASSUMPTION	COST EFFECT WHEN ASSUMPTION IS: INCREASED	DECREASED
INVESTMENT RETURN	-	+
RETIREMENT AGE	-	+
MORTALITY RATE	-	+
DISABILITY RATE	+	-
SALARY INCREASES	+	-
TRUST EXPENSES	+	-

Figure 5

Investment Return. This is one of the most important assumptions made by the actuary. Regardless of the assumed rate, the actual rate earned by the underlying funds controls the ultimate level of pension costs. Therefore, the actuary will usually adopt a realistic rate which he feels can be achieved in the long run with a considerable degree of certainty. To the extent that actual investment returns are higher than assumed, then future pension costs will be reduced.

Retirement Age. The plan may provide a full benefit when an employee reaches age 65, or possibly after 30 years of service without regard to age. But when will they actually retire? Initially, the actuary will make an intelligent "guess" as to the probability that an employee will retire at a given age. As experience develops, this assumption may be changed. For example, a plan amendment may liberalize the early retirement benefits resulting in more employees retiring early.

Mortality. Usually, the actuary will base his assumption upon a mortality table published by the Society of Actuaries. From a cost point of view, mortality affects both the probability of retirement benefits becoming payable and how long a benefit is paid. Normally, a male at age 65 can be expected to survive approximately 15 years. Increasing the mortality assumption decreases the cost of the pension plan.

Disability. If the plan provides a benefit upon disability, there are two aspects of this assumption upon plan costs. First, what is the probability that an employee will become disabled and, hence, eligible for disability benefits? Furthermore, once an employee becomes disabled, what is the probability that he will die or recover, thus, how long will the disability benefit be payable? Since statistical information for a particular plan is usually based upon a small number of disabled employees, the actuary will normally rely upon statistics provided by combining several plans for purposes of selecting a disability assumption. Since becoming disabled triggers the payment of a benefit, an increase in the disability rate assumption increases plan costs.

Salary Increases. For pension plans in which the benefit is related to employee compensation, an increase in salary increases the cost of the plan. Normally, the salary increase assumption is selected to be consistent with the investment returned assumption. For example, an 8% investment return and a 6.5% salary increase assumption would be typical. The 1.5% differential between the interest and the salary assumption is a critical aspect in the overall pension cost. For plans with benefits

related to final average salaries, an increase in the difference between the investment and the salary assumption has a substantial impact upon plan cost.

Trust Expenses. The expense of maintaining the pension plan is similar to a benefit cost and hence an increase in the trust expense assumption increases the cost of the benefit plan.

Select Actuarial Cost Method and Compute Costs

After the assumptions are selected, the actuary must then choose an actuarial cost method and compute the plan cost. To illustrate the various methods, let's use a simplified set of assumptions.

ACTUARIAL ASSUMPTIONS

SALARY/WAGE INCREASES	0%
INVESTMENT RETURN	0%
DISABILITY	0%
WITHDRAWAL	0%
DEATH BEFORE 65	0%
EXPENSES	0%
LIFE EXPECTANCY AT 65	15 YEARS

Figure 6

Furthermore, to keep our illustration simple, the determination of cost will be based upon a single employee with the following characteristics:

HYPOTHETICAL EMPLOYEE

SALARY/WAGE	$20,000
SOC SEC BENEFIT BASE	$12,000
CURRENT AGE	40
AGE AT HIRE	35
PAST SERVICE	5 YEARS
FUTURE SERVICE AT 65	25 YEARS
TOTAL SERVICE AT 65	30 YEARS

And finally, the plan will provide a retirement benefit based upon final average salary and years of covered service, with a higher benefit rate for salary above the Social Security benefit base.

PLAN PROVISIONS

NEW PLAN EFFECTIVE NOW

CREDIT GIVEN FOR SERVICE BEFORE AND AFTER EFFECTIVE DATE

1% × SERVICE × HIGH 5 AVE SALARY UP TO SSBB

plus

1.5% × SERVICE × HIGH 5 OVER SSBB

Figure 8

Having selected our actuarial assumptions, gathered the employee data and reviewed the plan provisions, the actuary is then prepared to calculate the actuarial cost. Due to the simplified assumptions which we have selected for this illustration, the only benefit to consider begins at age 65. The benefits which will be paid are calculated as follows:

BENEFIT AT AGE 65

1 % × (30 YEARS) × $ 12,000

plus

1.5 % × (30 YEARS) × ($20,000 - 12,000)

=

$3,600 + 3,600 = $ 7,200

Figure 9

Since our basic assumption is that all retirees live for fifteen years, we expect this $7,200 benefit to be payable for fifteen years.

There are many ways that we could pay the employee the $7,200 annual benefit. One method would be merely to send a check each year after the employee retires and not pre-fund (that is, no contributions are made prior to retirement). This method is called the "pay as you go" method and is depicted in Figure 10. Note that no contributions are made prior to age 65. After

age 65, $7,200 per year is paid for the assumed life expectancy of 15 years for a total payout of $108,000. The Social Security system uses a similar method, but this method is not legal for private pension plans.

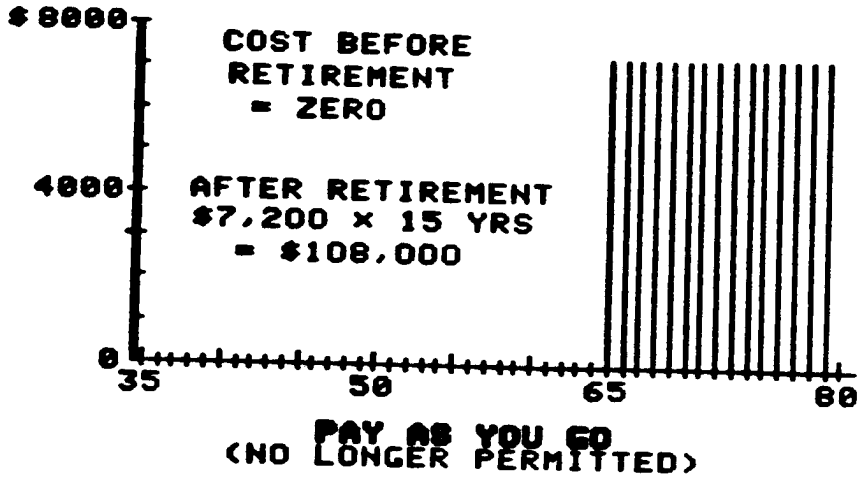

Figure 10

Figure 11 is another funding method referred to as "terminal funding," wherein a lump sum contribution is made to the plan at age 65 which provides the benefits to be paid thereafter. Under this method, nothing is contributed prior to retirement and at age 65 a lump sum contribution of $108,000 would be made to the plan. Since our assumption is that there are no interest earnings, the total contribution is equal to the amount of future benefits. Like the "pay as you go" method, this method is also not legal for private pension plans.

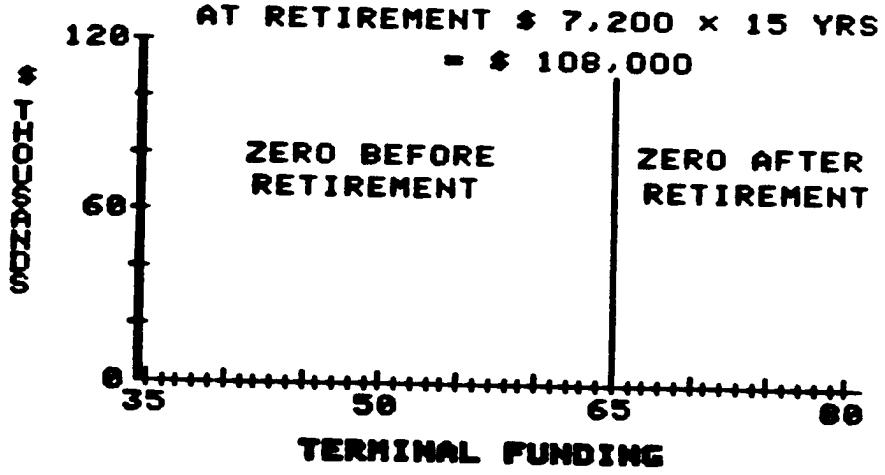

Figure 11

Defined benefit pension plans are designed with contributions made to the plan in advance, generally during the employee's working lifetime. To understand these advance funding methods, the definition of a few terms would be helpful. These terms are the present value of benefits (PVB), the present value of future normal costs (PVFNC), and the actuarial assets (AA). Figures 12, 13 and 14 provide definitions of these three terms:

PRESENT VALUE OF BENEFITS (PVB)

- The present value of all benefits expected to be paid in the future to the existing group of plan participants and/or their beneficiaries.
- PVB reflects benefits accrued in the past and benefits to be earned in the future.
- Anticipated salary increases are reflected in the calculation of PVB.

Figure 12

PRESENT VALUE OF FUTURE NORMAL COSTS (PVFNC)

- Normal cost is the annual pension cost assigned to a year by the actuarial cost method.
- The PVFNC is the present value of the normal cost payments expected to be made in the future on behalf of the existing participants.

Figure 13

ACTUARIAL ASSETS (AA)

The actuarial value of plan assets is the market value of the plan assets.

Figure 14

Under an advance funding method, contributions are made to the plan in advance, typically during the employee's working lifetime. In our example pension plan, we could pay for all the benefits prior to the date our theoretical employee retires, that is between the effective date of the plan (when our employee is age 40) and age 65. To do this, we need to contribute $4,320 per year for the 25-year period to accumulate the $108,000 which is the amount to be paid out after retirement. This method is called the "aggregate cost method" and the annual payment is called the "normal cost." Figure 15 depicts this method.

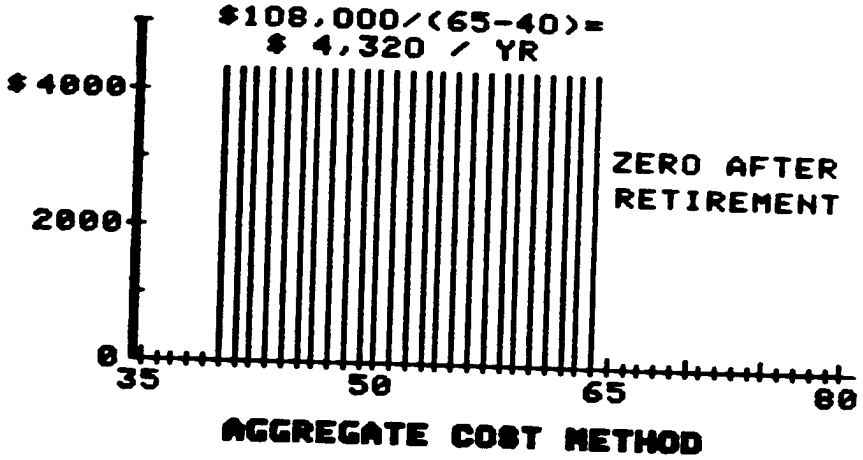

Figure 15

Under another actuarial funding method, the actuary determines the actual cost of the plan as above, but he assumes the contributions commence at the date that an employee is hired and continue until he retires. In our example, this would mean leveling the cost from age 35, the date our employee was hired, to age 65, the date he retires, thus over a total period of 30 years. The level annual cost, again called the normal cost, would be $3,600 per year as shown in Figure 16. This normal cost ($3,600 per year) accumulated for 30 years, would produce the required $108,000 at age 65. Under this method, the annual contribution is determined from age 35, even though the plan was not started until our employee was age 40.

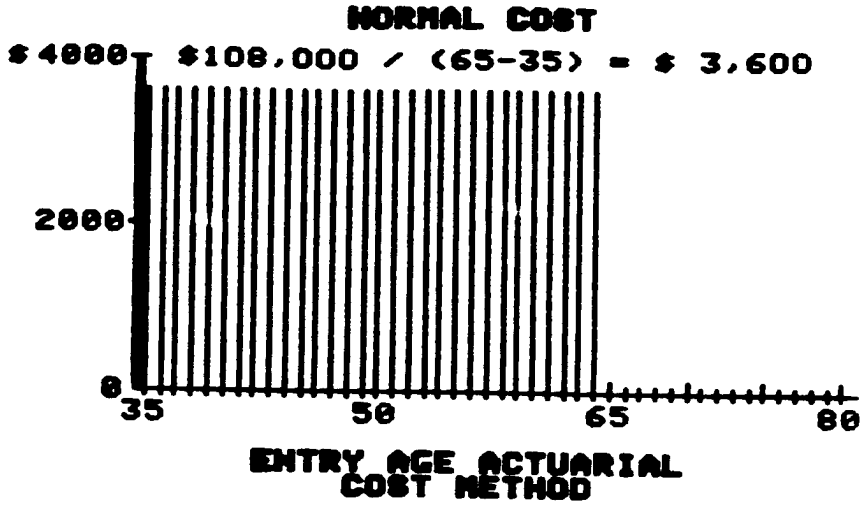

Figure 16

Therefore, there are five years for which no contributions were made. The total of these unpaid contributions (unpaid normal costs) is referred to by the actuary as the "unfunded actuarial liability." The unfunded actuarial liability, often referred to as UAL, represents the amount which would have been accumulated over and above the plan assets if:

1. The current plan had always been in effect;
2. The normal cost had been paid in the past;
3. Our actuarial assumptions had always been realized.

Over the years, the unfunded actuarial liability has also been referred to as the unfunded supplemental present value or the unfunded liability. For our example, the pension plan UAL is merely the sum of the contributions for the five years during which the $3,600 normal cost contribution has not been made. Figure 17 illustrates our unfunded actuarial liability.

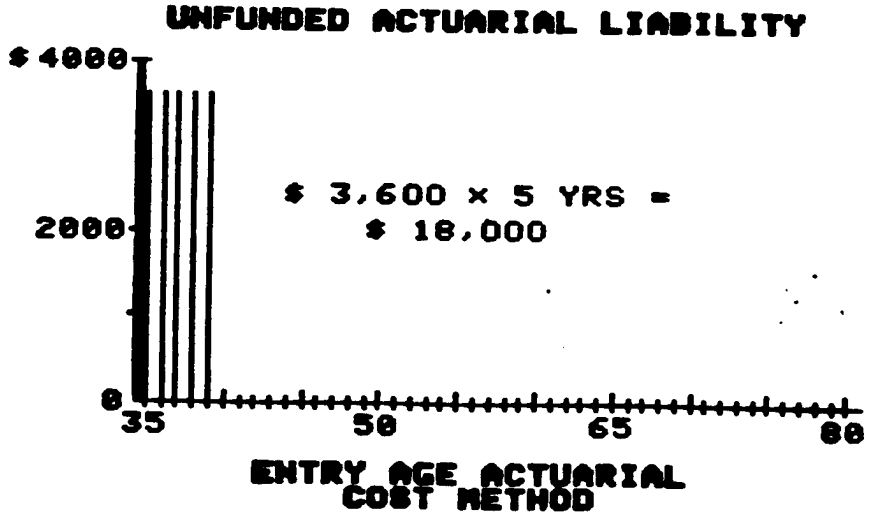

Figure 17

As part of the entry age actuarial cost method, one must determine how to pay off (amortize) the $18,000 unfunded actuarial liability in our example. The common method is to amortize the initial unfunded liability over some fixed time period, usually 25 or 30 years. Using a 30 year amortization period, the $18,000 would be paid off at the rate of $600 per year as shown in figure 18.

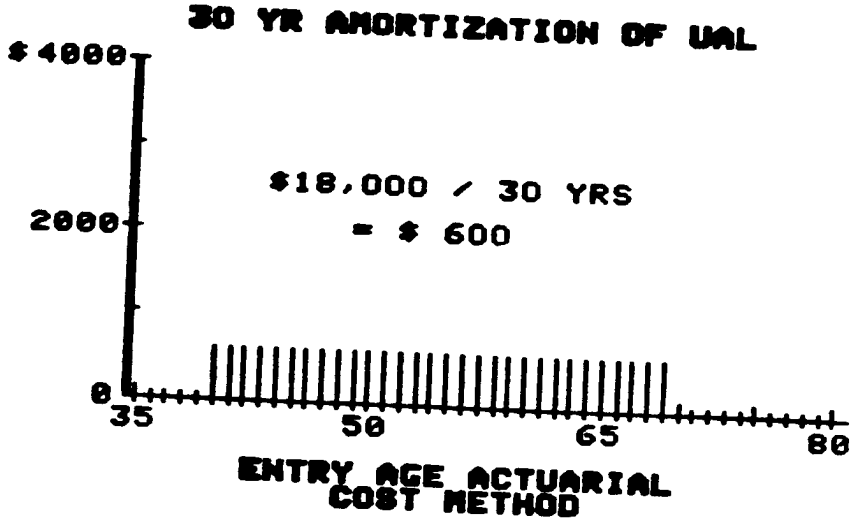

Figure 18

Finally, under the entry age cost method, the total annual contribution required, as shown in figure 19, is the normal cost ($3,600 for 25 years) plus the amortization of the unfunded actuarial liability ($600 for 30 years). The total amount of the contribution is $108,000. Don't be concerned by the fact that the payments for the unfunded actuarial liability are made after the employee retires. This is one advantage of covering large groups of employees and in essence contributions are being made for some of the employees after they retire.

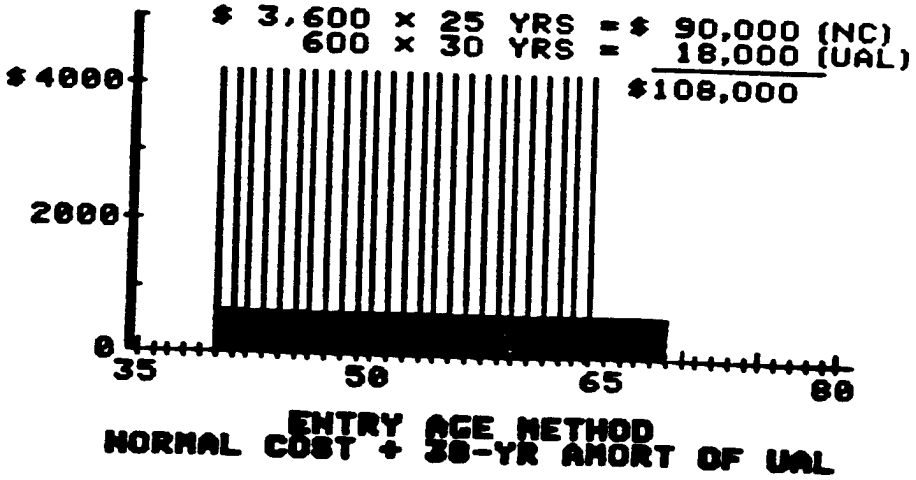

Figure 19

Referring back to our entry age cost method, we have identified four terms - the present value of future benefits, the present value of future normal costs, the actuarial assets, and the unfunded accrued liability. Figure 20 summarizes the basic funding equations for advance funding methods. Generally, these equations say that benefits will be provided by the present assets, future normal cost payments, and future payments toward the unfunded actuarial liability.

FUNDING EQUATIONS

- PUB = PUFNC + AA + UAL
  OR
- PUB - PUFNC - AA = UAL
  OR
- PUB - PUFNC = UAL + AA
  OR

REQUIREMENTS = RESOURCES

Figure 20

Although we'll not go into a detailed illustration of the effects of actual plan experience being different from actuarial assumptions, actuarial gain and loss is another item to consider. Using the basic funding equations described above, the actuary can evaluate the current year's actuarial gain/loss through the basic relationship:

Actuarial gain/loss = expected UAL - actual UAL.

An example of an actuarial gain would occur if, for instance, our single employee lived 16 years rather than the 15 years following retirement. Under that basis, the plan would have a $7,200 actuarial loss occurring when the employee attained age 80. Normally, actuarial gains and losses are amortized over 15 year periods, similar to the amortization of the UAL.

Under another actuarial funding method, unit credit, the actuary determines the annual cost based upon the value of the benefit earned during the current year. The normal cost under the unit credit method, as shown in Figure 21, is calculated from the benefit formula, but using only one year of service in the calculation. Since we have assumed no investment earnings in this example, the normal cost under the unit credit method is the same $3,600 as under the entry age method.

UNIT CREDIT METHOD

NORMAL COST =

THE PRESENT VALUE OF THE BENEFIT EARNED DURING THE CURRENT YEAR BASED ON PROJECTED SALARIES.

NC = [1% × 12000 + 1.5% × (20,000-12,000)]
× (15 YEARS PAYOUT)

= $ 3,600

Figure 21

Under the unit credit method, the unfunded actuarial liability is determined as the present value of the accrued benefits less the value of the assets. Figure 22 shows the calculation of the UAL, which, again, it is the same as under the entry age cost method, since we have assumed no investment earnings.

UNIT CREDIT METHOD

UNFUNDED ACTUARIAL LIABILITY =

THE PRESENT VALUE OF THE ACRRUED BENEFITS LESS THE MARKET VALUE OF THE ASSETS.

UAL = [1% × 12,000 + 1.5% × (20,000-12000)]
× (5 YRS SERVICE) × (15 YRS PAYOUT)

= $ 18,000

Figure 22

And finally, recognizing both the payment of the normal cost and the 30 year amortization of the unfunded actuarial liability, the total contribution is $4,200 per year for 25 years and $600 per year for the next 5 years. Again, these contributions are exactly the same as under the entry age method, due to the simplified assumptions which we have selected.

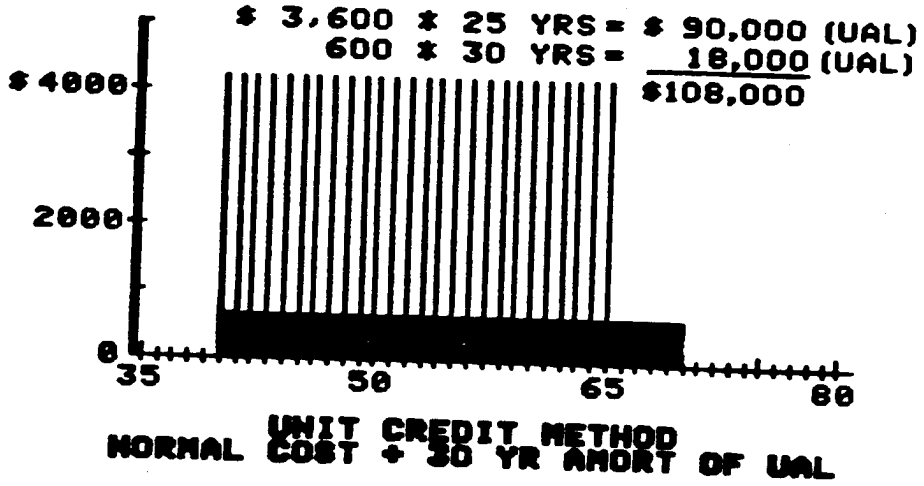

Figure 23

The inclusion of a salary and an investment return assumption further illustrates advance funding methods. Let's now assume that salaries increase at 6.5% per year, and that our investment return is 8%, thus a 1.5% differential between the investment earnings rate and the salary increase rate. Figure 24 shows the effects of the 8% salary increase, resulting in our hypothetical employee's salary increasing from $20,000 per year to $96,554 per year. Furthermore, since our plan bases benefits upon a five year average salary, $82,817 is the basis for the benefit determination.

HYPOTHETICAL EMPLOYEE

SALARY/WAGE	
AT 40	$ 20,000
AT 65	$ 96,554
SSBB AT 65	$ 45,761
HIGH 5 YR AVE SALARY AT 65	$ 82,817
CURRENT AGE	40
AGE AT HIRE	35
PAST SERVICE	5 YEARS
FUTURE SERVICE AT 65	25 YEARS
TOTAL SERVICE AT 65	30 YEARS

Figure 24

Figure 25 demonstrates the application of the same benefit formula to the new data for a hypothetical employee. Rather than an annual benefit of $7,200 per year under our no-salary increase assumption, the benefit here is $30,403 per year, thus an increase of over 4 times, due to the 6.5% annual salary increases.

BENEFIT AT AGE 65

1 % × (30 YEARS) × $ 45,761

plus

1.5 % × (30 YEARS) × ($82,817 - 45,761)

=

$13,728 + 16,675 = $ 30,403

Figure 25

Figure 26 shows the determination of present values of future benefits and normal costs for the hypothetical employee, recognizing the higher projected benefit and 8% investment earnings. Discounting the $30,403 benefit which commences at age 65 at an 8% interest rate produces a total present value of future benefits of $27,931. Under the entry age method, it is typical to determine normal cost as a level percentage of the employee's projected salary. Thus, projecting the employee's salary increases at 6.5% and discounting all future payroll for that employee at an 8% interest rate results in a total present value of future payroll of $360,168. Dividing the $27,931 present value of future benefits by the $360,168 present value of future payroll produces a normal cost rate of 7.755% of salary.

PRESENT VALUES AT AGE 35

PVB = $ 27,931

PV FUTURE PAYROLL = $360,168

NORMAL RATE = 7.755 %

THE NORMAL COST IS A LEVEL 7.755 %
OF COVERED PAYROLL

Figure 26

Since salary is assumed to increase 6.5% per year, and the normal cost is determined as a level percentage of salary, the normal cost increases 6.5% per year. In Figure 27, we see the normal cost at age 35 is $1,132 whereas the normal cost at age 64 is $7,031. The $7,031 normal cost is calculated as 7.755% times the $90,661 salary at age 64.

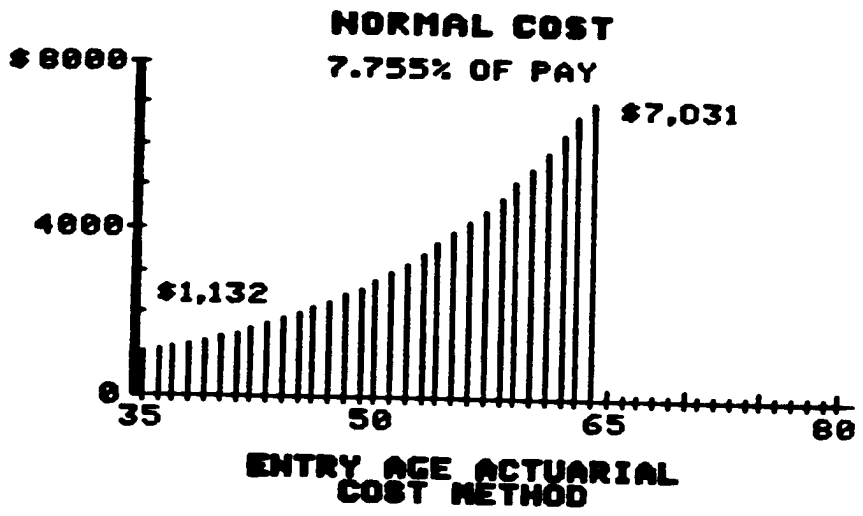

Figure 27

In Figure 28 we apply our basic funding equation to determine the unfunded actuarial liability at age 40 when the plan is initiated. The $41,040 present value of future benefits is calculated recognizing that the $30,403 benefit commences 25 years later (at age 65), and is payable for 15 years. The calculation discounts the $30,403 annual benefit payment at an interest rate of 8%. The $32,832 present value of future normal costs is calculated as 7.755% of the projected salaries earned at age 40 and beyond, again discounted at 8% interest.

PRESENT VALUES AT AGE 40

PVB	=	$41,040
-PVFNC	=	-32,832
-ASSETS	=	- 0
UAL	=	$ 8,208

OR, UAL = PVB - PVFNC - AA
= $41,040 - 32,832 - 0
= $8,208

Figure 28

In Figure 29, we see that amortizing the $8,208 unfunded actuarial liability over a 30 year period at an 8% interest assumption results in an annual cost of $675. This cost commences at age 40 and is payable through age 69.

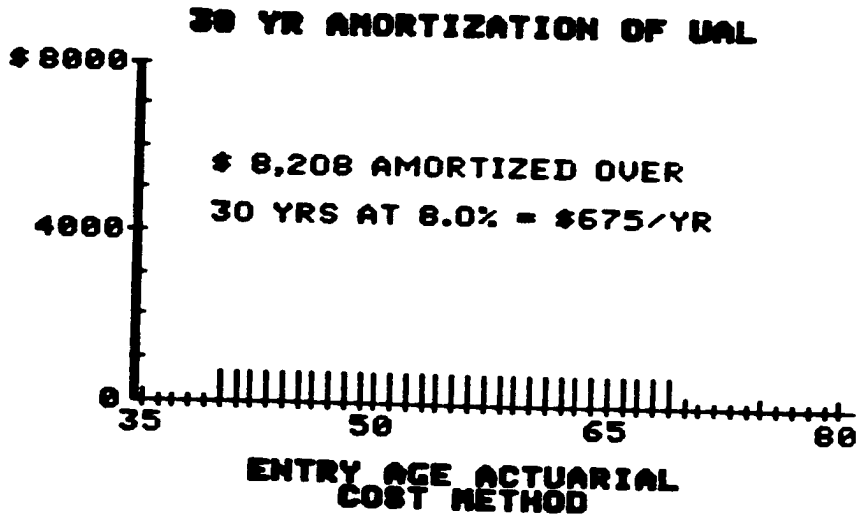

Figure 29

Now combining the normal cost and the 30 year amortization of the UAL, we see the total projected contribution for funding the pension plan. At age 40, the contribution is $2,226 which is 11.1% of the $20,000 salary earned at age 40. At age 64, the normal cost has increased to $7,706, but expressed as a percentage of pay it has reduced to 8.5%. The reason that the contribution has decreased as a percentage of pay relates to the fact that the 30 year amortization of the UAL is a level $675 per year, whereas the salary increases at 6.5% per year over this time period.

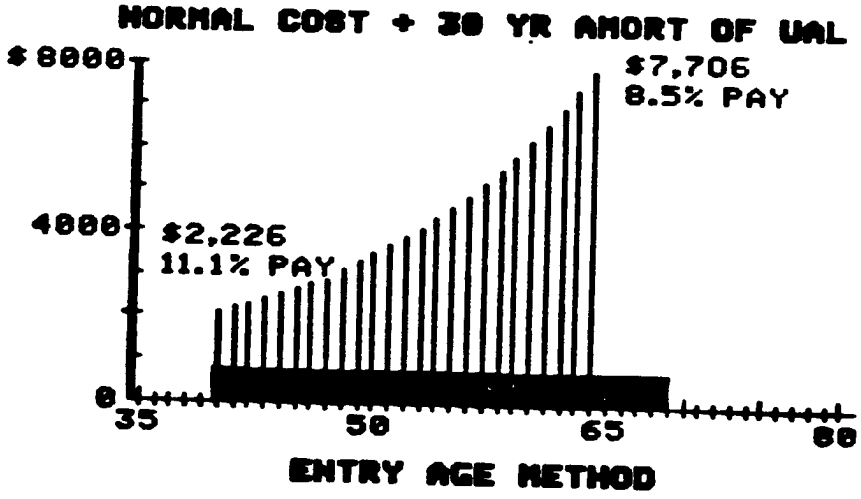

Figure 30

Figure 31 shows the calculation of the normal cost under the unit credit method using the same salary assumption. The value of the benefit earned at age 40 is $1,368. This calculation recognizes the projected benefit which is earned in the year the employee is 40, that the benefit commences at age 65 and is payable for 15 years. The value of the benefit earned at age 41 would be 8% higher, which reflects 1 year less of interest discount since that benefit is deferred only 24 years rather than 25 years for the benefit earned at age 40. The normal cost for later years continues at this 8% annual escalation.

UNIT CREDIT METHOD

NORMAL COST

THE PRESENT VALUE OF THE BENEFIT
EARNED DURING THE CURRENT YEAR
BASED ON PROJECTED SALARIES.

NC = [1% × $45,761 + 1.5% × (82,817 - 45,761)] ×
15 YR ANNUITY FACTOR @ 8.0%
DISCOUNTED TO AGE 40 @ 8.0%

= $ 1,368

Figure 31

The calculation of the unfunded actuarial liability parallels the determination of the normal cost at age 40. As shown in Figure 32, we first determine the benefit which is earned for each year of service, reflect that there have been 5 years of past service and then apply the appropriate discount factors. Since this is a new plan, and hence an asset fund has not developed, there are no assets to deduct from this unfunded actuarial liability. This $6,840 liability is 5 times the normal cost at age 40, which reflects the 5 years of past service which must be funded.

UNIT CREDIT METHOD

UNFUNDED ACTUARIAL LIABILITY

THE PRESENT VALUE OF THE ACRRUED BENEFITS
LESS THE MARKET VALUE OF THE ASSETS.

UAL = [1% × 45,761 + 1.5% × (82,817-45,761)]
× 5 YRS SERVICE × 15 YR ANNUITY FACTOR
DISCOUNTED TO 40 AT 8.0% LESS ASSETS

= $ 6,840 - 0 = $ 6,840

Figure 32

Figure 33 combines the annual contribution for the normal cost and the 30 year level contribution which amortizes the unfunded actuarial liability. This total contribution begins at $1,931, or 9.7% of pay and increases to $9,237 or 10.2% of pay.

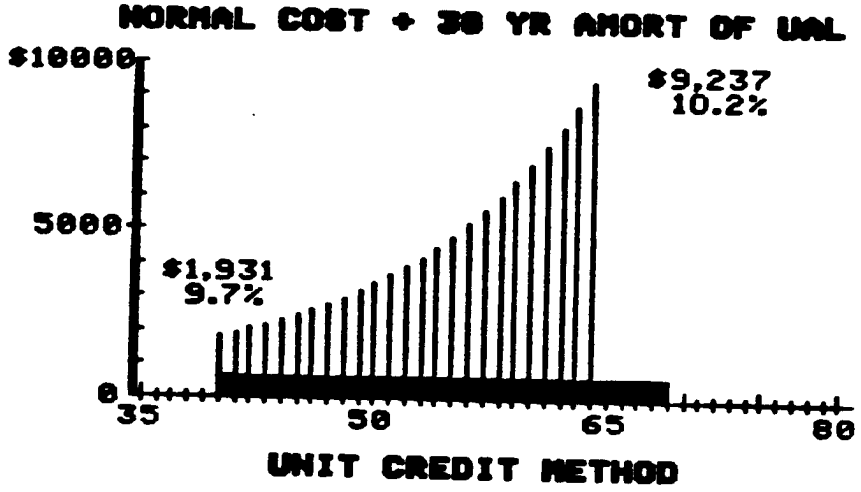

Figure 33

It is interesting to compare the relative annual cost under the entry age and the unit credit cost methods. As depicted in Figure 34, the annual contribution, expressed in dollars, is higher under the entry age method through approximately age 50, at which point there is a crossover and the unit credit method has the higher contribution. In practice this crossover could occur earlier or later than in our assumed plan.

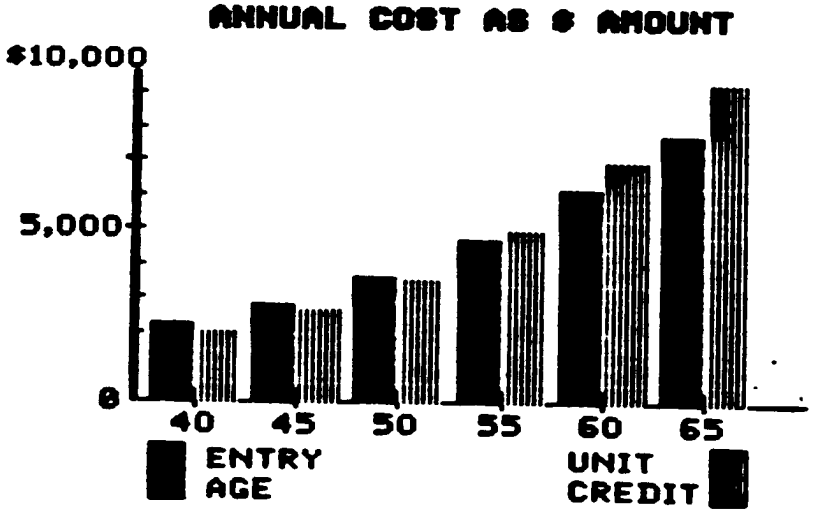

Figure 34

Typically, plan sponsors review the pension costs as a percentage of salary. In Figure 35, we see the comparison of the entry age and the unit credit methods with the annual cost expressed as a percentage of pay.

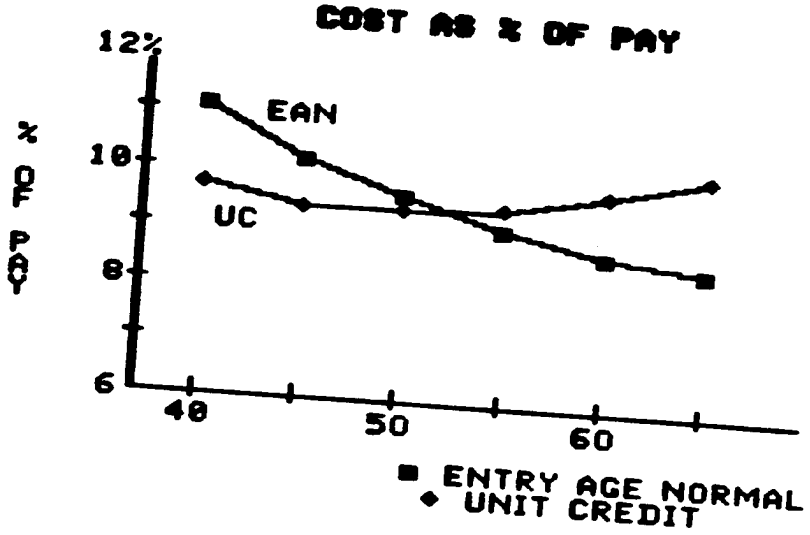

Figure 35

It is interesting to note that normal cost under the entry age method, expressed as a percentage of pay, is level. However, due to the level dollar amount of the 30 year amortization of the unfunded actuarial liability, that method has resulted in a decreasing cost as a percentage of pay. On the other hand, the unit credit method has normal costs which are an increasing percentage of pay. When we combine the level dollar amount for 30 year amortization of the unfunded actuarial liability, the overall result is a somewhat level annual cost as a percentage of pay.

An Overview of Pension Funding, Investment and Administrative Issues*

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This paper presents an overview of financial planning and policy setting for pension plans. It draws primarily on practice in the private sector, but some discussion of other retirement systems is provided where relevant. The discussion covers issues relating to both decision-making at the plan sponsor level and public policy.

The subject matter falls into three categories:

1. Funding
2. Investments
3. Plan Design

While plan design is a topic covered in other policy forums, I list it here to stress its financial aspects, and because discussion of funding and investment issues will necessarily involve plan design considerations. The linkages show up in a number of places. First, the choice of a defined contribution (as opposed to a defined benefit) plan resolves the funding issue. By definition, the defined contribution plan is always fully funded. This choice shifts the investment risk from the sponsor to the plan participant, having the obvious implications for investment

* Presented to the Policy Forum of the Senate Governmental Affairs Committee, May 30,1984

policy. As will be discussed below in some detail, there is also evidence to suggest that a linkage exists between funding levels and plan redesign in defined benefit plans.

Prior to the 1970's plan sponsors spent relatively little time on pension planning and policy setting. Many of the key decisions were delegated to consultants, actuaries and investment managers. Plan assets and liabilities were too small to justify much of an in-house capability. The situation changed as costs, assets and liabilities grew to the point where they began to play a significant role in the financial structure of the sponsor. Impetus also came from the investment losses that accompanied the bear markets of 1973-74, the impact of the inflationary burst of the 1970's on liabilities and the responsibility imposed on sponsors by ERISA.

FUNDING

Traditionally, discussions of funding have relied on a comparison of funded vs. pay-as-you-go alternatives to meeting defined benefit obligations. In practice, however, virtually all major private pension plans meet the funding requirements necessary to qualify for special tax treatment. For sponsors of these programs the decision is not <u>if</u> but <u>how much</u> to fund. A wide range of discretion exists within the IRS regulations of acceptable funding schemes. It is, therefore, useful to think about a continuum of possible funding levels.

The remainder of this section discusses the funding decision from the perspectives of both the plan sponsor and public policy. The private pension system will be the focus of the discussion but, in consideration of the fact that many of the problems of underfunding exist in social security and public retirement systems, some remarks about these retirement programs are included. The factors to be considered in setting funding policies include:

1. Benefit Security
2. Tax Treatment
3. Saving/Capital Formation
4. Intergenerational Transfers
5. Recognition of Pension Cost
6. Ownership and Control of Assets

Benefit Security

In the absence of funding sufficient to meet all pension obligations, beneficiaries must rely on the assets and earning power of the plan sponsor. At present, participants have a claim on the sponsor inferior to that of the sponsor's creditors. It is even possible that the beneficiaries will have a claim junior to that of the stockholders of a corporation since distributions to the latter could take place before all pension claims are settled. For this reason, some sponsors feel that they have a moral obligation to set aside assets to meet, at least, the vested liabilities of the plan. It is also the reason for the

inclusion of funding and insurance regulations in pension law.

Pension funding leads to the accumulation of a segregated pool of assets which guarantees the sponsor's obligation. In theory, funding is the optimal way to secure benefits, providing that the sponsor is forced to keep enough assets in the pension fund at all times to meet the liabilities that are accumulated. In practice, this does not happen. Sponsors utilize the discretion that exists to adjust funding levels when it is in their best interests to do so. As a general rule, sponsors experiencing earnings and/or cash flow problems can be expected to borrow from the pension fund as opposed to their creditors and investors. As an article in the Wall Street Journal of October 29,1981 described it, "Companies are finding ways to cut back on pension costs. More often the companies are financially troubled."

In addition, sponsors are permitted to adjust to pension fund gains and losses over relatively long time spans. This being the case, the investment policy of the fund plays a big role in benefit security. More risky investment policies produce greater uncertainty in future funding status.

The level of funding can also have an impact on benefit levels. Pressure from participants to improve benefits is more likely to occur in plans that are well-funded. The presumption is that the sponsor can afford the improvements. This may be true if an event such as superior investment performance over a reasonably long

time frame has occurred. However, if the plan became well-funded because of increased contributions, then the sponsor is not necessarily in a position to improve benefits. Assets have simply been transferred from the company to the fund. (As discussed below, the sponsor does obtain tax benefits which may enable it to afford higher benefit levels.) The pressure to improve benefits is often cited by sponsors as a reason for not liberally funding their pension programs.

At the other extreme, is the inability of the sponsor to meet the current level of benefits because it could lead to a restructuring of the plan provisions. While this has happened in the private sector, the current focus of attention is on the Social Security System.

At present, the premiums paid to the Pension Benefit Guaranty Corporation are not adjusted for the level of unfunded liability that exists. This results in the subsidization of sponsors with poorly funded plans by those that have funded to a level sufficient to provide a high degree of security.

In the private sector, plan participants are not completely without recourse in the event the plan sponsor does not fund in sufficient amounts to provide a secure plan. The participants can demand higher wages to compensate them for assuming more risk. The wage increases could be allocated to private saving as a hedge against potential losses of pension benefits. If this mechanism worked well then provision of benefit security would

not be of particular concern; the sponsor would compensate the participants for any potential loss. In practice, the adjustment process can take a long period of time and equilibrium may not be approached for certain classes of beneficiaries. It is also clear that some beneficiaries may not possess the power to negotiate compensation.

The provision of benefit security is probably the biggest reason for having a well-funded pension plan. Other systems, such as "book reserve" however, could achieve a high level of benefit security if they are properly structured and operate under well-conceived regulation.

Tax Treatment

The bulk of corporate pension plans are qualified to receive special tax treatment. Specifically, contributions to the pension fund, subject to maximum limitations, are deductible at the time they are made. Earnings on pension fund investments are not taxed. Ultimately, the corporation that funds its pension program will pay higher taxes than it otherwise would have had it not funded the pension plan. These higher taxes stem from the fact that, in the future, tax-deductible contributions to the pension fund will be reduced by an amount equal to the principal plus interest accumulated in the pension fund.

The two tax provisions provide the sponsor with the opportunity to defer taxes. These deferrals are interest-free loans from the

government. The firm benefits from these deferrals because it has money that would otherwise have been collected by the government to invest in the pension fund. The net result of these tax benefits is that it permits the sponsor to earn a tax-free rate of return on its investment in the pension fund. This rate of return will almost always compare favorably to other corporate opportunities and is one reason why companies fund more than they are required to. The simplest way for a company to take advantage of this tax situation is to raise debt to finance the contributions to the pension fund and to invest pension fund assets in bonds. These transactions will produce a completely arbitraged position in which the firm earns tax-exempt income on its investment and pays tax-deductible interest costs on the financing.

The tax benefits increase the wealth of the sponsor to the detriment of the government. The government will either have to raise taxes or reduce spending if it is to recover its lost wealth.

Saving/Capital Formation

When a plan sponsor makes discretionary contributions to a pension fund it is normally because it is a desirable use of capital. The factors that enter the decision-making process include the sponsor's tax position, the need for capital internally, the availability of capital and the risk position of the sponsor (and the attendant possibility of plan termination).

To finance these outlays, the sponsor must 1) issue securities, 2) reduce dividends and other distributions or 3) liquidate assets.

The positive effects of pension funding on national saving and capital formation are largely offset by the cash flows that are associated with financing. The explanation of this not-too-well publicized phenomenon is best explained in the framework of macroeconomic analysis. Saving equals investment is a fundamental identity of national income accounting. Stated another way, the physical amount of new capital produced equals the amount of national income not consumed. This relationship is not altered by increases or redistribution of the amount of financial claims outstanding. As discussed below, pension funding is likely to affect these variables to a much greater extent than it is to affect capital formation.

These propositions are easy to see for the case where the plan sponsor issues securities to finance pension outlays. The sponsor is both a buyer and seller of securities. Securities purchased are assets of the pension fund; securities issued are liabilities of the sponsor. In terms of net investment, these transactions cancel out. If the sponsor finances pension contributions out of cash income, funding will result in a direct increase in corporate saving. The holder's of the sponsor's stock, however, will receive reduced distributions. They can be expected to recover the lost income by decreasing their own

personal saving-if they react rationally to the decision of the sponsor. These stockholders will realize that they have an increased investment in the company vis-a-vis the pension fund; hence they can liquidate some of their holdings and still have the same total level of investment. When this happens, there is no increase in total saving, but there is a reduction in the amount saved directly by individuals and an increase in the amount indirectly saved by them via firms whose equity they hold. This theoretical proposition may not accurately forecast behavior under these circumstances. Finally, if firms transfer assets to the pension fund there is no change in saving.

The arguments presented above leave out the effects of taxation. Tax effects are the major mechanism by which funded pensions can affect saving. As the section of this paper dealing with tax effects describes, funding initially increases corporate saving and reduces government saving. In the aggregate, these effects cancel out. Funding does, however, transfer wealth from the government to the plan sponsor. The response of the government to the losses in immediate and long term revenues is important to determining the effects of funding on saving.

The point to keep in mind is that the first-order effect of funding pensions on saving/capital formation is not likely to be material because of the financing requirements funding imposes. Any significant effect must come from behavioral responses of parties affected by the funding decision.

Intergenerational Transfers

A major concern with unfunded or poorly funded pension systems is that future generations will pay for benefits granted to the current generation of participants. In a private pension plan, the most significant intergenerational transfers that might take place concern present and future stockholders of the firm. If a company does not maintain a well-funded plan, there is the chance that the current generation of stockholders will sell their stock to the future generation at a price that does not reflect the true value of the company's unfunded pension liability. With sufficient disclosure, however, this is not likely; future generations of stockholders will not be worse off if the pension plan is poorly funded. When the existing generation of stockholders sells its stock, buyers will pay less for it than they would have had the company fully funded its pension obligations. In an efficient capital market, the effects of pension funding decisions will be capitalized in the value of the enterprise. In recent years, analysts and investors have been paying more attention to corporate pension plans in their analysis of firms. This activity has made the marketplace more efficient with respect to valuing pension assets and liabilities.

In public retirement and social security systems the mechanisms which exist to counter intergenerational transfers are much weaker. In a public retirement system, lack of funding reduces current taxes at the expense of increasing the future tax burden.

To the extent that property values reflect differential tax rates, the value of property sold by current owners to future generations will reflect the current generation's funding decisions. In the Social Security System, one has to rely,in part, on the tenuous proposition that the value of the employers' enterprises will reflect the payroll tax burden that is imposed on them by the System.

Recognition of Cost

One often-stated benefit of funding is that it forces sponsors to recognize the cost of their pension programs. This assumes that pension cost is equated to cash contributions. While this is the case for many pension plans, there is no good reason why pension expense should be tied to cash outlays. The accounting profession, in their much-discussed "Preliminary Views", have taken the position that accrued pension expense should be a separate calculation from funding calculations and, further, that the method for recognizing expense should be standardized. Separation of cost recognition from funding will, most likely, force sponsors to keep two sets of books but this would not be an overly burdensome task.

It is possible that those who advocate funding to force sponsors to recognize pension cost want to impose the increased discipline of matching cash with benefit promises as opposed to simply making a book entry. This motivation would appear to be more in the benefit security than in the cost recognition category.

There are differing philosophies concerning the most appropriate measurement of pension expense and acceptable actuarial cost methods exist to implement each of them. One view, adopted by the accounting profession, is that pension expense should be geared to the change in the liability from one year to the next. The adoption of this method leads to an expectation of rising costs for each individual employee both in absolute dollars and relative to payroll. This doesn't mean, however, that a rising cost pattern is to be expected for a plan covering a dynamic workforce wherein new entrants are replacing departures of older employees. An opposing view advocates that pension expense should be measured as a level percentage of compensation. Since the value of accrued benefits increases with age, this approach results in the accrual of higher costs relative to the value of accrued benefits in the early years of a worker's tenure, offset by lower costs in later years. Again, this theoretical pattern for the current group of employees, is not necessarily what can be expected for a dynamic workforce.

Ownership and Control of Assets

In recent years, the recapture of surplus pension assets by sponsors has stimulated a good deal of public concern. The issue being debated is "Who owns the assets of defined benefit pension plans ?". The position taken by many sponsors is that the liabilities are their legal obligations and, therefore, the assets are their property. The threat that excess assets might

revert to the plan's beneficiaries is a factor influencing sponsors to fund at minimally acceptable levels.

INVESTMENTS

The management of the assets of defined benefit plans should be different from that of defined contribution plans. This is because the participant bears the risk in the defined contribution plan, not the sponsor. Since the age, wealth, objectives and other important factors that enter into investment decision-making vary among the participant group, in a defined contribution plan it is often desirable to offer investment options so that they can tailor their own investment programs.

The management of defined benefit plan assets will be the focus of this section. The management of these investments is comprised of activities that fall in three broad areas:

1. Investment Policy
2. Management Structure
3. Performance Review

Investment Policy

The investment policy of most major pension funds has shifted to reflect changes in goals such as "maximize return subject to prudent levels of risk" and "exceed the performance of the S&P 500" to more refined and measurable objectives. These changes reflect the increasing emphasis on matching investment goals to the plan's liabilities and the financial goals and resources of

the sponsor.

Probably the most important change that has taken place is in the internalization of the asset allocation decision. Traditionally investment managers were given discretion to vary the fixed income/stock ratios of the funds that they managed. In contrast, plan sponsors now set target long term asset mixes based upon the desire not only to maximize return but also to control the risk level for the fund relative to the plan's liabilities.

The development of an asset allocation policy entails the following steps: 1) identify asset classes, 2) develop assumptions, 3) calculate "efficient" asset allocations, 4) project returns, 5) link asset allocation to the plan's liabilities and 6) link asset allocation to the financial strategy and resources of the sponsor.

There has been a move in recent years to expand the list of asset classesin which pension funds invest. In addition to domestic equity and fixed income securities, sponsors now invest in international securities, real estate, venture capital and other non-traditional asset classes. Sponsors have also expanded the areas within the domestic equity and fixed income markets in which they invest (e.g. investing in smaller capitalization companies).

Analysis of investment alternatives requires the formulation of assumptions for the following variables: inflation, real interest

rates, expected returns for each asset class, risk of each asset class and degree of correlation, or comovement, among asset class returns. The quantitative measurement of risk, as the standard deviation or volatility of rate of return, has become an increasingly accepted practice. The use of correlation in conjunction with risk measurement to arrive at a quantitative measure of diversification obtainable through alternative asset allocations has also become standard. The approach taken to formulating assumptions usually starts with an analysis of historical relationships. Modifications are made based upon fundamental analysis of each of the asset classes.

Some asset allocations, because of superior diversification, will dominate others in terms of providing better expected returns at each level of risk. Computer programs exist which assist the sponsor in identifying these alternatives given the assumptions made about the economy and capital markets. The asset allocation target for the fund will be selected from one of these "efficient" allocations based upon the sponsor's ability and willingness to assume risk.

Projections of rates of return under most likely, best and worst scenarios are usually produced for the asset classes under consideration. The projections are done for both nominal and real returns and cover both short- and long-term horizons. The results assist the sponsor in selecting an asset mix that best meets its needs and preferences.

The ultimate goal of accumulating assets is to pay pension benefits. Quantitative techniques exist which permit the sponsor to see the effects of asset allocation on both the plan's funding ratios and its cost. Again, the data is presented for most likely, best and worst scenarios. Bond "immunization" and "dedication" strategies, which involve construction of portfolios that have cash flow payouts closely matching the outlays needed in the future to pay benefits to groups of plan participants, is the purest form of matching liabilities with assets.

In most cases, gains and losses on pension fund assets will be borne by the plan sponsor. Therefore, the financial strategy and resources of the sponsor are a determinant of the level of exposure that the sponsor is willing to take in the pension fund. One tool for assisting in this analysis is the "augmented balance sheet"; this is a presentation of the assets and liabilities of the pension fund together with the sponsor's assets and liabilities. The augmented balance sheet identifies such variables as the leverage in the total financial structure of the sponsor with the pension plan included.

Management Structure

Once an asset allocation decision is made, the next step is to put an investment organization in place. Key questions that arise in this activity include 1) will money be managed internally ? will external managers be used ?; 2) will passive management, active management or a combination of the two be adopted ?; 3)

what manager styles will be employed ? will balanced or specialist managers be hired?

Most sponsors rely heavily on outside investment managers. Those that have in-house operations are typically utilizing relatively passive investment strategies and often the internal activity is limited to fixed income investments. Sponsors that internalize investment operations have large enough pools of capital to justify going to the expense of setting up an investment organization and do so, in part, to better understand the activities of their external investment managers.

The decision to utilize active vs. passive management is ultimately determined by the sponsor's belief about the extent to which the capital market is "efficient" (The term is being used here in a different context than it was used in the discussion of asset allocation decisions.). In a perfectly efficient capital market, where security prices are rationally set and reflect all available information, active management would not produce any risk-adjusted excess returns. Performance data fails to provide any conclusive evidence concerning whether active management can add value. A recent survey of managed equity accounts published by a leading performance evaluation service revealed that the percentage of actively managed accounts outperformed by the S&P 500 index in each of the last fifteen years ranged from 24% to 91%. Over the last five overlapping fifteen year horizons (1965-79 through 1969-83) the percentage of the active managers

outperformed by the S&P 500 ranged from 63% to 74%. These statistics are not adjusted for risk differentials of the managers versus the index. While the majority of the managers have been beaten by the index this does not prove that it is impossible to identify some managers who are better than average.

The key choice in manager styles is between balanced vs. specialist managers. Balanced managers invest broadly in their asset class so as to provide a diversified investment portfolio. They often also allocate assets across asset classes (e.g. stocks and bonds) in response to both their outlook for relative risks and rewards and to the asset allocation they believe the sponsor should have. The sponsor who has gone through the process of asset mix selection internally often prefers to utilize specialist managers. The latter typically concentrate within a subset of the asset class that their allocation represents. There are two reasons for using specialists. The first is to obtain better control of the asset allocation of the fund. The second is that sponsors feel the concentration of an investment firm's talent on a narrow subset of the market will produce superior investment results.

Performance Review

The performance review process is not limited to evaluation of the returns obtained by the various managers. Other tasks include review of the portfolios of the managers to see if they continue to reflect their style and allocation of cash flow to maintain

the desired asset allocation and manager structure.

PLANNING AND FORECASTING

Funding, investment and plan design decisions interact with one another to determine the financial performance of a pension system over time. An actuarial report provides a snapshot each year of the plan's operation. As traditionally performed, this valuation is not ideally suited for long range planning because three factors that influence a plan's course over time are not incorporated. They are:

1. New Entrants
2. Experience vs. Actuarial Assumptions
3. Plan Design Changes

Traditional actuarial valuations cover the current group of plan participants. They anticipate the departure of active participants usually for the following causes; turnover, retirement, disability and mortality. No anticipation is made for new entrants. Yet most organizations hire at least for replacement and the new entrant group has a material effect on the plan's finances.

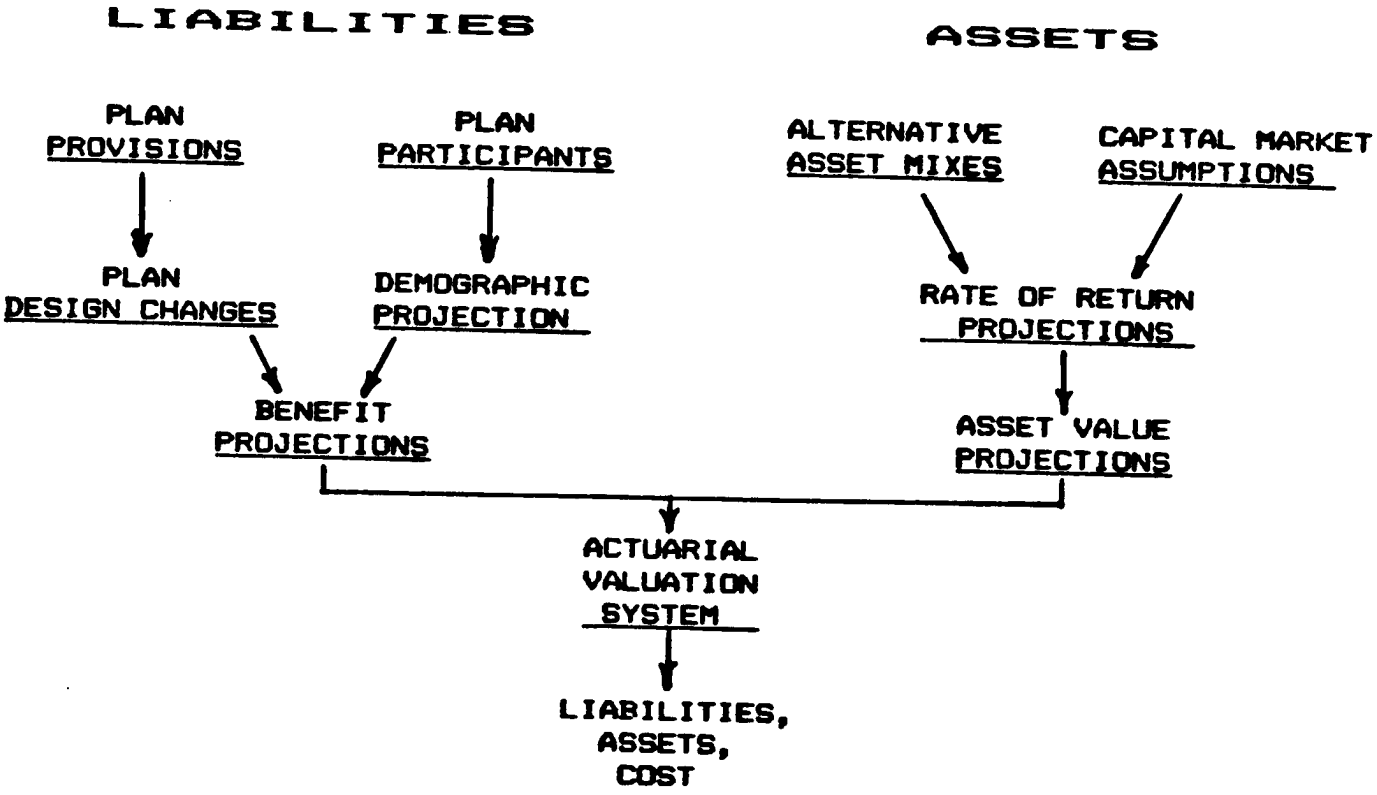
In all valuations assumptions are made the demographic events listed above and the following key economic variables; 1) inflation; 2) real improvements in salary such as productivity, merit and seniority and 3) discount rate. Unless these

assumptions are made to explicitly reflect current economic conditions, systematic deviations from targets (in actuarial terms, gains and/or losses) will occur. Many plans have adopted assumptions that, in aggregate, appear to be conservative with respect to the current economic environment.

Changes in plan provisions are explicitly factored into an actuarial valuation unless they are scheduled in the plan document. This factor is particularly important in hourly pension plans where benefits are based upon a flat dollar amount earned for each year of service.

In recent years, computerized financial planning systems have been developed. They incorporate the same methodology for valuation that is utilized in actuarial valuations but add the components necessary to make dynamic forecasts. A block diagram of a typical system is presented in the figure on the following page. These systems have been used by plan sponsors in the private sector to analyze the consequences of funding, investment and plan design decisions.

FORECAST VALUATION SYSTEM



REFERENCES

Black, F.:"The Investment Policy Spectrum: Individuals, Endowments and Pension Funds.",Financial Analysts Journal,January-February 1976

_____:"The Tax Consequences of Long-Run Pension Policy",Financial Analysts Journal,July-August 1980

Cooper,G.:"FundingorPay-As-You-Go",Benefits International, April 1975

Jackson, P.H.:"Investment Aspects of Pension Fund Prepayments",Proceedings of the Conference of Actuaries in Public Practice,1977-1978

Sharpe, W.F.:"Corporate Pension Funding Policy",Journal of Financial Economics,June 1976

Tepper, I.:"The Future of Private Pension Funding", Financial Analysts Journal, January-February 1982

_____:"Comments on Combining Financial and Actuarial Risk:Simulation Analysis", Journal of Finance, May 1982

_____:"Taxation and Corporate Pension Policy", Journal of Finance, March 1981

_____:"Consequences of Providing for Retirement Income Through Advance-Funded Versus Pay-As-You-Go Programs, Retirement Income and the Economy, Employee Benefit Research Institute, 1981

_____:"How much funding for your company's pension plan" (with R.D. Paul), Harvard Business Review, November-December 1978

_____:"Risk vs. Return in Pension Fund Investment", Harvard Business Review, March-April 1977

_____:"Pension Plan Liabilities and Corporate Financial Strategies" (with A.R.P. Affleck), Journal of Finance, December 1974

_____:"Optimal Financial Strategies for Trusteed Pension Plans", Journal of Financial and Quantitative Analysis, June 1974

Treynor, J.L., Regan and Priest:The Financial Reality of Pension Funding Under ERISA, Dow-Jones Irwin 1976